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EXAMINER

LUDLOW, JAN M

ART UNIT

PAPER NUMBER

1743

DATE MAILED: 07/02/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/819,166

Applicant(s)

SHALON ET AL

Examiner

Jan M. Ludlow

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-29 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-29 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 27 March 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

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1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

3. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

4. Claims 1-14, 17-26, 28-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Feygin. (5,957,167)

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Feygin teaches a method and apparatus for printing biological substances on a substrate. A capillary tube with a slit in it (slit not precluded by the instant claims) can be decelerated to print a droplet (col. 3, line 23). A spring biasing device is shown in Figure 3 and the capillaries inherently have weight. Plural dispensing members and automated operation are taught (col. 5, lines 55-65). With respect to reservoirs, the upper end of the capillary is a reservoir; alternatively, the source well into which the capillary device is dipped for loading is a non-capillary reservoir in fluid contact with the capillary during loading.

Feygin fails to explicitly teach open capillary bore ends open to atmosphere.

It would have been obvious to provide the capillary tube embodiment in the device of Figure 6 in order in order to deliver fluids as taught by Feygin. Note that a capillary tube is inherently open at both ends and the device of Figure 6 does not cover the end of the printing tube. It would have been obvious to provide positioners and other known moving expedients in order to automate the system as taught by Feygin. It would have been obvious to make the heads replaceable in order to remove damaged or contaminated heads as was known in the printer and pipetting art. With respect to "wire bonding capillary" in that applicant has disclosed no special properties of wire bonding capillaries defining over ordinary capillaries, it is the examiner's position that the capillaries of Feygin are structurally capable of use as wire bonding capillaries and/or constitute wire bonding capillaries to the extent the term is definite.

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1. Claims 15-16, 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Feygin as applied to claims 1-14, 17-26, 28-29 above and further in view of Thomas.

Feygin fails to teach the preservative.

Thomas teaches a reagent transfer device having a resilient rubber pad which is abutted with the transfer device outlet opening to prevent evaporation from the device during storage (col. 3, lines 59-64).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide an evaporation prevention device such as a rubber pad for abutting the capillary openings in the device of Feygin in order to prevent evaporation of reagents from the openings during storage as taught by Thomas.

2. Claims 1-10, 12-23, 26-27, 29-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Little et al ('925) in view of Roach and/or Feygin.

Little teaches method and apparatus for preparing arrays by dispensing low volume droplets on a substrate. Capillary needles 62 with bores open at both ends are provided in a pin block. Biasing springs 74 restrict motion. The needles can be made of steel, silica, polymers, or any other suitable material (bridge cols. 7-8). A robotic system is used to move the pin block to a source plate containing wells (larger than a capillary and in fluid contact with the capillary), and then to the substrate, which can be silicon, plastic, metal or any suitable material, flat or pitted (col. 9, lines 10-17).

Solutions of DNA can be dispensed, and the capillaries may be filled by capillarity (col. 9, lines 40-65)

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Little fails to teach "printing" or an upper end exposed to atmosphere.

Roach teaches that capillary devices can be contacted with substrates to dispense via capillary action (col. 3, lines 30-35).

Feygin teaches that capillary devices can be contacted with substrates to dispense via capillary action (col. 1, lines 24-26).

It would have been obvious to one of ordinary skill in the art to provide the small volumes of solution to a flat surface as taught by Little. It is the examiner's position that such dispensing constitutes "printing" as used in the instant application. It would have been further obvious to omit the pressure source in order to use capillarity dispensing as taught by Roach or Feygin in concert with the capillarity filling and similar to the solid pin contacting taught by Little. It would have been obvious to provide positioners and other known moving expedients in order to automate the system as taught by Little. It would have been obvious to make the heads replaceable in order to remove damaged or contaminated heads as was known in the printer and pipetting art. With respect to "wire bonding capillary" in that applicant has disclosed no special properties of wire bonding capillaries defining over ordinary capillaries, it is the examiner's position that the capillaries of Little are structurally capable of use as wire bonding capillaries and/or constitute wire bonding capillaries to the extent the term is definite.

3. Claims 15-16, 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Little and Roach as applied to claims 1-14, 17-26, 28-29 above and further in view of Thomas.

Little fails to teach the preservative.

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Thomas teaches a reagent transfer device having a resilient rubber pad which is abutted with the transfer device outlet opening to prevent evaporation from the device during storage (col. 3, lines 59-64).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide an evaporation prevention device such as a rubber pad for abutting the capillary openings in the device of Little in order to prevent evaporation of reagents from the openings during storage as taught by Thomas.

4. Applicant's arguments with respect to claims 1-29 have been considered but are moot in view of the new ground(s) of rejection.

Applicant argues that the instant actuator is different from that of Feygin, but Feygin teaches that in addition to the latches, pneumatic or hydraulic actuators can be used and the process automated (col. 5, lines 1-14) and uses solenoids as an example (col. 5, lines 40-65). When the solenoid is reversed, the spring or core will retract, readying the device for reuse. Note that the instant claims do not require touching the substrate. The springs or cores or other device incompletely resist motion in that they permit some motion.

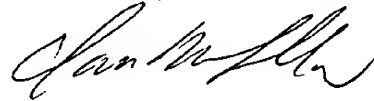
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jan M. Ludlow whose telephone number is (703) 308-4039. The examiner can normally be reached on Monday-Thursday, 11:30 am - 8:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jill A. Warden can be reached on (703) 308-4037. The fax phone numbers

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for the organization where this application or proceeding is assigned are (703) 872-9310 for regular communications and (703) 872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.



Jan M. Ludlow
Primary Examiner
Art Unit 1743

jml
June 30, 2003